

WHAT IS CLAIMED IS:

1. A method for controlling a time synchronization relationship between a communications network time and a module located at a node connected to said
5 communications network for providing a module reference time, said method comprising:

determining a time synchronization function is enabled;

10 determining a time difference between said communications network time and said module reference time provided by said module;

determining that said determined time difference is greater than a first limit, and less than or equal to a second limit; and

15 gradually adjusting, automatically, said network communications network time to synchronize with said module reference time over a predetermined synchronization interval.

20 2. The method of claim 1, wherein said gradually adjusting results in a reduction of said time difference between said communications network time and said module reference time that is substantially constant and without a time reversal.

3. The method of claim 1, further comprising:

25 determining a system change is requested; and
in response to said system change request, immediately synchronizing, automatically, said communications network time and said module reference time.

30 4. The method of claim 3, wherein said system change is selected from a group of actions consisting of: a module being initialized for providing said module reference

time, a predetermined next synchronization interval occurring, a user-initiated time synchronization occurring, and a Daylight Savings Time event occurrence.

5 5. The method of claim 1, further comprising:

determining that said time difference between said communications network time and said module reference time is greater than a third limit that is greater than said second limit; and

10 in response to said time difference being greater than said third limit, taking no automatic action to synchronize said time difference between said communications network time and said module reference time.

15 6. The method of claim 1, wherein said module is designated a master module and only said master module provides said module reference time.

20 7. A storage medium having computer readable program instructions embodied therein for providing a method for controlling a time synchronization relationship between a communications network time and a module located at a node connected to said communications network for providing a module reference time, said storage medium comprising:

program instructions for determining a time synchronization function is enabled;

25 program instructions for determining a time difference between said communications network time and said module reference time provided by said module;

30 program instructions for determining that said determined time difference is greater than a first limit, and less than or equal to a second limit; and

program instructions for gradually adjusting, automatically, said network communications network time to synchronize with said module reference time over a predetermined synchronization interval.

5 8. The storage medium of claim 7, wherein said program instructions for gradually adjusting results in a reduction of said time difference between said communications network time and said module reference time that is substantially constant and without a time reversal.

10 9. The storage medium of claim 7, further comprising:

program instructions for determining a system change is requested; and

15 program instructions for, in response to said system change request, immediately and automatically synchronizing said communications network time and said module reference time.

20 10. The storage medium of claim 9, wherein said system change is selected from a group of actions consisting of: a module being initialized for providing said module reference time, a predetermined next synchronization interval occurring, a user-initiated time synchronization occurring, and a Daylight Savings Time event occurrence.

11. The storage medium of claim 7, further comprising:

25 program instructions for determining that said time difference between said communications network time and said module reference time is greater than a third limit that is greater than said second limit; and

30 program instructions for, in response to said time difference being greater than said third limit, taking no automatic action to synchronize said time difference between said communications network time and said module reference time.

12. A module for controlling a time synchronization relationship between a communications network time and a module reference time of a node connected to said communications network, said module comprising:

5 a processor;

a network interface for providing a communication interface to said communications network;

10 a bus interface for providing a communication interface to a host processor; and

a system clock subsystem for providing said module reference time and for controlling a time synchronization function to reduce a time difference between said communications network time and said module reference time.

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13. The module of claim 12, wherein said time synchronization function of said system clock subsystem reduces said time difference substantially constant and without a time reversal.

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14. The module of claim 12, wherein said time synchronization function of said system clock subsystem:

determines a time synchronization function is enabled;

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determines said time difference between said communications network time and said module reference time provided by said module;

determines that said determined time difference is greater than a first limit, and less than or equal to a second limit; and

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gradually adjusts, automatically, said network communications network time to synchronize with said module reference time over a predetermined synchronization interval.

5 15. The module of claim 14, wherein said time synchronization function of said system clock subsystem further:

determines a system change is requested; and

10 in response to said system change request, immediately synchronizes, automatically, said communications network time and said module reference time.

15 16. The module of claim 15, wherein said system change is selected from a group of actions consisting of: a module being initialized for providing said module reference time, a predetermined next synchronization interval occurring, a user-initiated time synchronization occurring, and a Daylight Savings Time event occurrence.

17. The module of claim 14, wherein said time synchronization function of said system clock subsystem further:

20 determines that said time difference between said communications network time and said module reference time is greater than a third limit that is greater than said second limit; and

25 in response to said time difference being greater than said third limit, takes no automatic action to synchronize said time difference between said communications network time and said module reference time.